Polar Code Implementation in Russian Federation
Administration of the Baltic sea ports
Vladimir E. Kuzmin
Northern Sea Route as a part of Russian polar waters within Polar Code area
107 permissions were issued to ships flying foreign flag in 2017.
In 2017 issued - 662 permissions

107 permissions were issued to ships flying foreign flag

7 vessels flying foreign flag were in breach of regulations: Netherlands, United Kingdom, Luxembourg and Sierra-Leone.
Training of Russian crews is already effected by our Maritime Universities
Ensuring compliance of Russian vessels to Polar Code requirements

Checking the ship compliance with Polar Code requirements is effected by RO
### Port State Control in sea ports of Russian Federation

#### in Arctic zone within the Polar Code area

<table>
<thead>
<tr>
<th></th>
<th>Russian vessels</th>
<th>Foreign vessels</th>
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</thead>
<tbody>
<tr>
<td>Total amount of inspections</td>
<td>112</td>
<td>8</td>
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<tr>
<td>Inspections with deficiencies</td>
<td>49</td>
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<tr>
<td>Inspections with detentions</td>
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<td>0</td>
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</table>

#### in Arctic zone outside of the Polar Code area

<table>
<thead>
<tr>
<th></th>
<th>Russian vessels</th>
<th>Foreign vessels</th>
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</thead>
<tbody>
<tr>
<td>Total amount of inspections</td>
<td>1458</td>
<td>114</td>
</tr>
<tr>
<td>Inspections with deficiencies</td>
<td>753</td>
<td>43</td>
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<tr>
<td>Inspections with detentions</td>
<td>24</td>
<td>1</td>
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Analysis of discharge dynamics from ships

Amounts of harmful discharges from bulker ships in Murmansk merchant port

<table>
<thead>
<tr>
<th>Year</th>
<th>Main Engine</th>
<th>Auxiliary Engines</th>
<th>Boilers</th>
<th>Total amount of discharge</th>
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<tbody>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
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<td>2015</td>
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</tr>
<tr>
<td>2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Bases of SAR and points of their location

SAR bases in Arctic waters
Search and rescue in the NSR waters is done by special service – Morspassluzhba (Морспассслужба Росморречфлота) using multifunctional search and rescue vessels with high ice class and with use of nuclear icebreakers.
Expected cargo turn-over for Sabetta:
LPG – 16,5 mln. ton/year;
LNG – 1,35 mln. ton/year;
Input into operation:
2017 – 6 mln. tons,
2018 - 6 mln. tons,
2019 – 5,85 mln. tons
Increase in capacity upto - 30 mln. tons,
including:
LPG – upto 25 mln. ton/year;
LNG – upto2,2 mln. ton/year;
Petrolem – 3,5 mln. ton/year.

Completion of project – 2019.

Sabetta terminal is a driver for development of port infrastructure in Arctic
#RUSSIA READY

BUT WHAT ABOUT OTHER COUNTRIES?
It is said that a crew’s ice certificate could be a solution, is that true or are we creating a false feeling of safety?
Out of 360° of parallel circle
134° belongs to the New World (USA, Canada, Denmark)
176° to the Old World
(160° to Russia and 10° to Scandinavia)
• 1728 - the first North Expedition
Vitus Bering, a Danish sea captain in the Russian Navy, sails through the Bering Strait
- Vitus Bering
- Martyn Shpanberg
- Alexey Chirikov
Admiral Kolchak (1874-1920)

- Ice breakers «Vaigach», «Taymyr»
- Discovery of the Northern Sea Route
- Charts created by Kolchak during his expedition were used till the end of 1950ies.
Icebreaker “Ermak” (1899), designed by admiral Makarov
Ice Breaker “KRASIN”

1916, built in the UK, improved design by admiral Makarov

1923

1932

2002
Ice Breaker Krasin was repaired recently. Russia is still the only country with nuclear ice breakers.
Admiral Makarov State University of Maritime and Inland Shipping

- 1934 – establishment of Hydrographic Institute of Glav Sev Mor Put (Northern Sea Route Administration), 1945 renaming after Admiral Makarov
- The only educational establishment in former soviet union countries training specialists for Arctic
- More than 3100 professionals graduated from Arctic Faculty (oceanographers, meteorologists, hydrographers)
Training experience

› **Instructors’ staff**

› During the course we invite:
  - Experienced Ice Master who worked at the NSR for many years
  - Experienced Ice Breaker Master
  - Experience Ice Pilot
  - Naval architects
Basic polar water training

- Basic knowledge of ice characteristics and areas where different types of ice can be expected in the area of operation
- Basic knowledge of vessel performance in ice and cold climate
- Basic knowledge and ability to operate and manoeuvre a ship in ice
- Basic knowledge of regulatory considerations

- Basic knowledge of crew preparation, working conditions and safety of operations in ice to be able to apply safe working practices and respond to emergencies
- Basic knowledge of environmental factors and regulations to ensure compliance with pollution-prevention requirements and to prevent environmental hazards
Advanced polar water training

- Knowledge of voyage planning and reporting to be able to plan and conduct a voyage in polar waters
- Knowledge of equipment limitations
- Knowledge and ability to operate and manoeuvre a ship in ice to be able to manage the safe operation of vessels operating in ice-covered waters

- Knowledge of safety to be able to maintain safety of the ship's crew and passengers and the operational condition of life-saving, firefighting and other safety systems in polar waters
Model course development instructor’s manual – course compendium
Makarov + Krylov
Practical IceNav Training on board city icebreaker

This add-on course includes trip on board in ice conditions and adds practical skills and more information on ice navigation such as:

› Safe working mooring practice in cold weather
› Navigation and use of propulsion in variable ice field and packed ice
ICE SELFIE – IMPORTANT PART OF TRAINING
PRACTICAL SUPERVISED OPERATION BY AZIMUTH PROPULSION SYSTEM
Environmental limitations, Lack of practical experience, Limited area for exercises
LNG/C “Christophe De Margerie”
First YAMALMAX for YAMAL LNG

Owner: SOVCOMFLOT
Builder: DSME
Class RS+BV, Arc 7
Keel Laid: 2015.11.16
Launched: 2016.01.15
Delivered: 2017.03.24

Principal Dimensions
Length Over All: 299.000 m
Breadth (Molded): 50.000 m
Scantling Draft (Molded): 13.000 m
LNG Cargo capacity: 172,6K m³

Main Generator Engine
Type and number: Wärtsilä 12V50DF x 4 sets, 9L50DF x 2 sets

Speed & Cruising Range
Service Speed: 19.5 knots
Cruising Range: 10,000 nautical miles

Propulsion Unit
Type and Number: ABB POD x 3 sets
Rated Motor Power: 45,000 kW
Vessel successfully passed Ice Trials over February and March 2017 performing ice operations in the remote Kara and Laptev Seas.
MV Boris Vilkitsky

Modern LNG, 2nd ship in Yamal Project series

Started operation November last year

Ice conditions were moderate (~ 1 meter)

Able to operate without Icebreaker (mild conditions)
INSTRUCTOR
Igor Zlodeev

❖ Instructor of the Makarov Training Centre.
❖ Master Mariner, Ice-pilot.
❖ 25 years of Arctic navigation experience and the ice-navigation experience in Canada and the USA navigating regions.
At the moment he works as an instructor for Makarov Training Centre of the Makarov State University of Maritime and Inland Shipping.
Ship features

❖ Taking into consideration her big size (breadth ca. 50 m) the bridge wings were not well heated - staying at the end of wing you should wear a warm clothes

❖ Ergonomic issues side windows angle does not allow to see ship’s sides.

❖ VHF station too far from azi-control station.
Search lights:
Forward and on sides,
Switched ON almost always

Ice radars:
The sigma S6 Ice Navigator™ by Rutter
PROTECTION FROM COLD

Protective shields and coverings
PSK to grab bag scenario – does not work - it is simply not enough space inside lifeboat...
LIFESAVING APPLIANCES

Ship was equipped with normal life raft, not the polar edition

As well as lifeboat – both do not take into account requirement to stay in for 5 days – no toilet, no ventilation, insufficient room for well etc.

No special means were also provided for boarding them
The tent was easy to install onboard the ship, but it is too big and too high to be installed in real ice conditions with wind.
Crew compliment
50 people
Human factor?

<table>
<thead>
<tr>
<th>Name of ship</th>
<th>Nationality of ship</th>
</tr>
</thead>
<tbody>
<tr>
<td>BORIS VILKITSKY</td>
<td>Cyprus</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Rank/Rating</th>
<th>Nationality</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Master</td>
<td>Indian</td>
</tr>
<tr>
<td>2</td>
<td>A / Master</td>
<td>Indian</td>
</tr>
<tr>
<td>3</td>
<td>Tr. Master</td>
<td>Indian</td>
</tr>
<tr>
<td>4</td>
<td>AZ C/O</td>
<td>Russian</td>
</tr>
<tr>
<td>5</td>
<td>ACO / ICE NAV</td>
<td>Russian</td>
</tr>
<tr>
<td>6</td>
<td>ACO</td>
<td>Indian</td>
</tr>
<tr>
<td>7</td>
<td>ACO / ICE NAV</td>
<td>Russian</td>
</tr>
<tr>
<td>8</td>
<td>2/O</td>
<td>Indian</td>
</tr>
<tr>
<td>9</td>
<td>2/O</td>
<td>Russian</td>
</tr>
<tr>
<td>10</td>
<td>2/O</td>
<td>Russian</td>
</tr>
<tr>
<td>11</td>
<td>2/O</td>
<td>Pakistani</td>
</tr>
<tr>
<td>12</td>
<td>3/O</td>
<td>Russian</td>
</tr>
<tr>
<td>13</td>
<td>3/O</td>
<td>Russian</td>
</tr>
</tbody>
</table>
Ice was not fast, it was drifting
The LNG carrier *Boris Vilkitsky*, a new ice-class vessel transporting natural gas from Russia’s Yamal LNG project, disregarded a number of safety rules on an Arctic voyage to the Port of Sabetta.

- The vessel, operated by a Dynagas LNG Partners, a joint venture by Dynagas, Sinotrans, and China LNG Shipping, entered the Northern Sea Route (NSR) despite the inoperability of its stern thrusters and port steering column.

- This malfunction, which occurred at least 10 days prior, limited the vessel’s capabilities and reduced its ice-classification from Arc7 to Arc4, prohibiting it from operating independently or even with an icebreaker escort in the waters of the Kara Sea. In violation of the rules the *Boris Vilkitsky* proceeded into the ice-covered waters of the NSR.

- The Russian Northern Sea Route Administration (NSRA) calls the incident a gross violation of the Rules of navigation in the waters of the NSR and states that “the vessel did not have the right to enter the water area of the Northern Sea Route. By its actions, the ship poses a threat to the safety of navigation, as well as the protection of the marine environment.”
What’s on the other side of the coin?
Ice horn
1. Have the following been informed of the ice conditions?
   - the Master
   - the engine room
   - the crew

2. Have watertight doors been shut, as appropriate?

3. Has speed been adjusted (N.B. momentum varies at the square of the ship's speed)?

4. Have instructions been issued on the following matters?
   - monitoring ice advisory service broadcasts
   - transmitting danger messages in accordance with SOLAS 1974 Chapter V, Regulation 2(a)

DATE: 04 Jan. 2017
Vessels, barges or floating objects may accumulate atmospheric & sea icing, which influences the stability characteristics and port operations.
### Wrong template?

**Voyage:** 55L  
**Date:** 24/01/2018  
**Local time:** 1200

<table>
<thead>
<tr>
<th>No</th>
<th>Action</th>
<th>Yes/No</th>
<th>Taken by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Have the following been informed of the ice conditions?</td>
<td></td>
<td>Officer in charge of navigational watch</td>
</tr>
<tr>
<td></td>
<td>The Master</td>
<td><strong>YES</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The Engine room</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The crew</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Have watertight doors been shut, as appropriate?</td>
<td><strong>YES</strong></td>
<td>Master</td>
</tr>
<tr>
<td>3.</td>
<td>Have speed and course been adjusted as necessary? (N.B. momentum varies as the square of the ship’s speed)</td>
<td><strong>YES</strong></td>
<td>Master</td>
</tr>
<tr>
<td>4.</td>
<td>Have instructions been issued on the following matters?</td>
<td></td>
<td>Master</td>
</tr>
<tr>
<td></td>
<td>Monitoring ice advisory service broadcasts</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transmitting danger messages in accordance with SOLAS 1974 Chapter V, Regulation 2 (a)</td>
<td><strong>YES</strong></td>
<td></td>
</tr>
</tbody>
</table>
Frankly speaking, if ISM procedures are well implemented on board you already should have everything you need. But unfortunately this is not always a case. Even the Polar Code insists on the Polar Water Operation Manual.

Hopefully, nowadays a number of good publications on this topic are available including NI ice Navigation by David Snider as well as many others. Though these all are very good books, seafarers are often in need of something more simple, more straightforward. All known books are intended for deck officers, nothing for engineers and ratings.
(1) Safety awareness

› I hope that here at Forum we are in a good position to rectify this. The idea is not to rewrite everything from scratch but just to collect all that we already have, filling the gaps we identified.

These guidelines could be discussed via correspondence group or meeting if needed. Not only navigation but survival and first aid as well as safe working practices onboard should be included.

We should decide if English version is enough or should it be English/French/Russian?

Prepared guidelines could be disseminated via Arctic Shipping Best Practices Information Forum website, via National Maritime Administrations or via Port State Control offers visiting the ship in ice area.
Operational Project Statistics

- Project plan totalling 1534 tasks and sub task
- Total time spent 33 months
- 13,000 plus emails generated
- 249 conference and video calls
- 176 individuals consulted
- 49 Individual Organisations consulted
- 23,769 man hours of work undertaken by the team on top of their day jobs
Management of Change

- Strict Process Observed Bi-weekly
- Reference documents scrutinised
- Changes implemented where necessary
- Inputted into Ship Management System
- Electronic Format
- Live document.

79 Documents and 468 pages later

Paper safety?
(2) Ice navigation courses advisory

- There are a number of good courses available though for now there is no accreditation system, and we are in position to make at least a list of such courses available and promote those who complies with high standards of training.

- Again we are here to discuss how much shall we go into accreditation process. The NI is going to develop one of its own like DP Training Scheme which we all familiar with...
It is not an easy task as it seems. It should be neither too long (we have manual for this) nor too short as it becomes too general and useless.

Ideally it should be a supplement for guidelines we develop.

The checklists should be open, so the companies would be able to modify them and make them ship specific.

We should decide if English version is enough or should it be English/French/Russian?
Thank you for attention!

Vladimir Kuzmin